

# Panel Discussion

3<sup>rd</sup> International Conference on Fuel Ammonia

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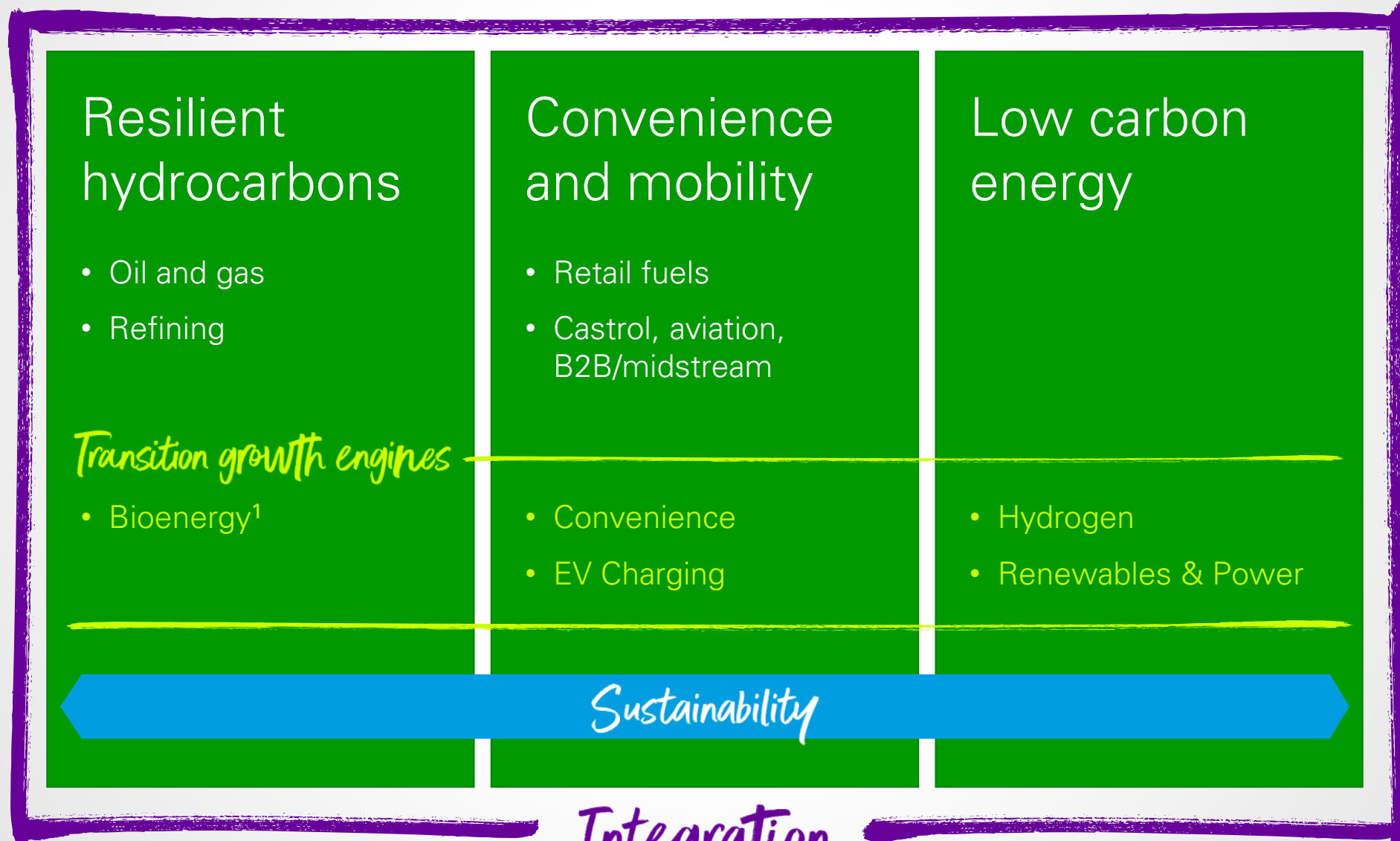
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# Transforming to an integrated energy company



(1) Bioenergy includes biofuels marketing reported in convenience and mobility



# Hydrogen and Renewables & Power – focusing investment

2030 aim  
**\$2-3bn**  
EBITDA\*

Hydrogen  
**double digit**  
unlevered  
expected returns<sup>1</sup>

Renewables  
**6-8%**  
unlevered

**~\$30bn**  
cumulative capex 2023-30

## Hydrogen

Key enabler to decarbonise hard to abate sectors

Early stage, fast growing sector with high barriers to entry

## Renewables & Power

Integration increasingly a key value driver

Scale and complexity in offshore wind supports enhanced returns

## Hydrogen

Building a leading position globally

- Starting with own operations – bp's refining demand
- Scaling-up refining facilities to regional hubs in US and Europe
- Building export hubs for hydrogen and hydrogen derivatives

Aim to deliver  
**0.5-0.7mtpa**  
hydrogen production by 2030

## Renewables & Power

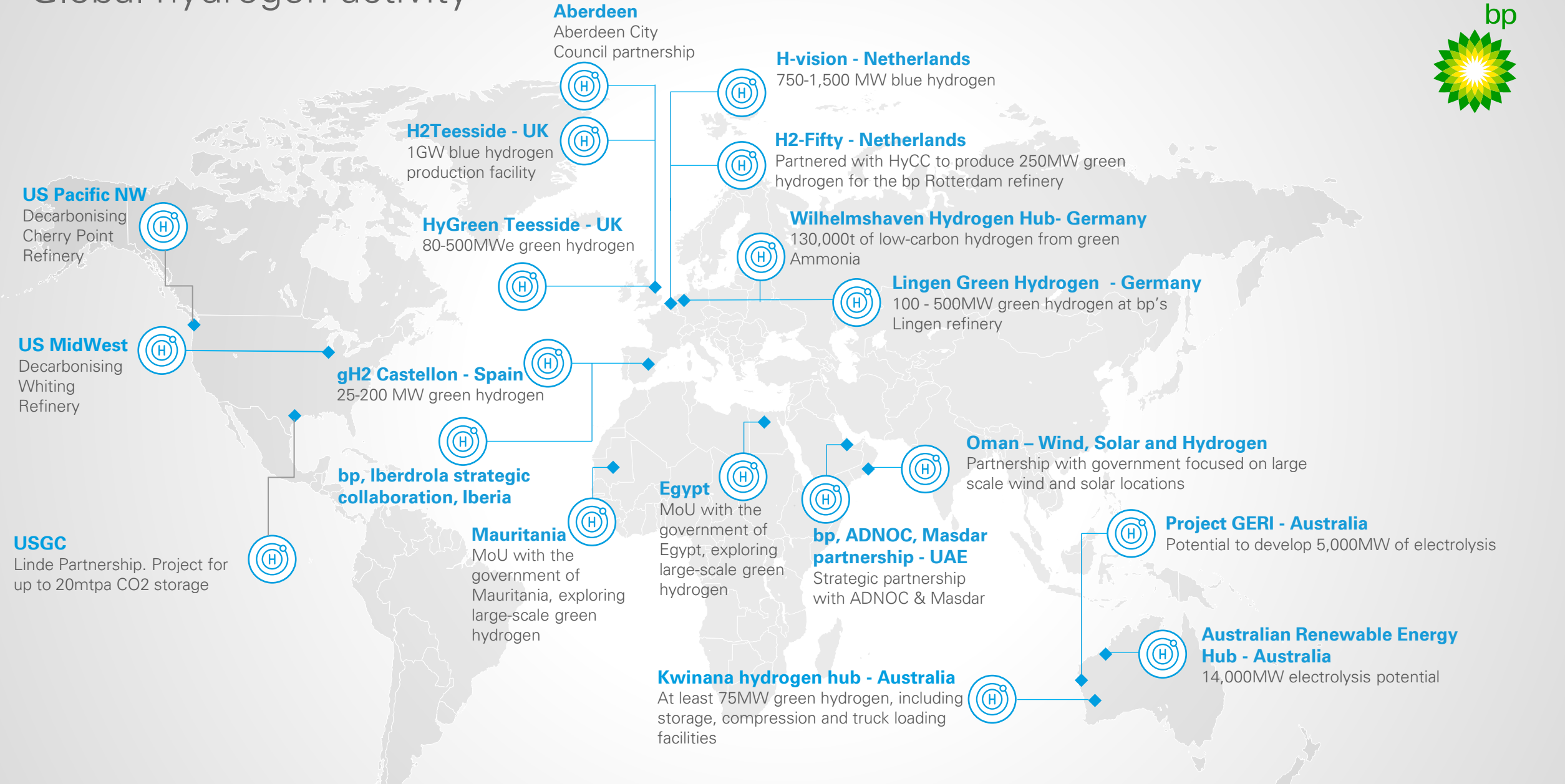
Creating value through integration

- Focusing investment in service of integration with hydrogen, trading, EVs and e-fuels
- Building our capability in offshore wind
- Scaling Lightsource bp: world class solar developer, self funding

Aim to deliver  
**50GW net**  
developed to FID by 2030

Aim to deliver  
**~10GW net**  
installed capacity by 2030

# Global hydrogen activity



Indicative capacities accurate as of November 2022, projects dependent on positive FID





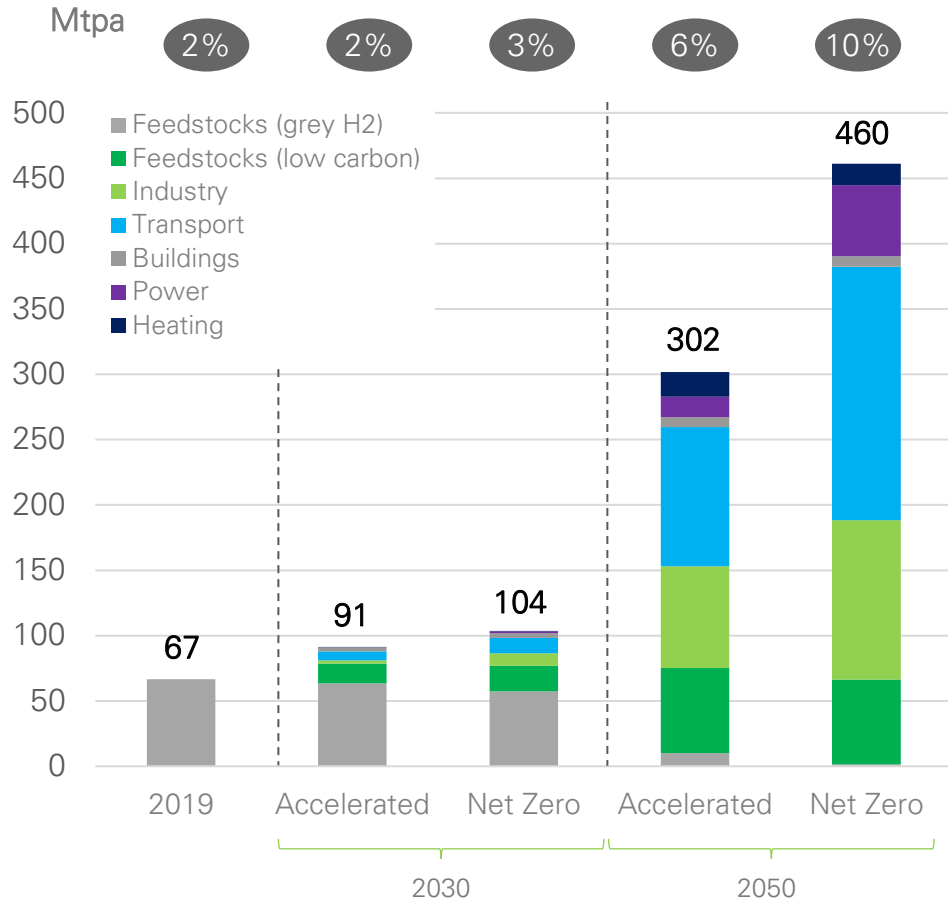
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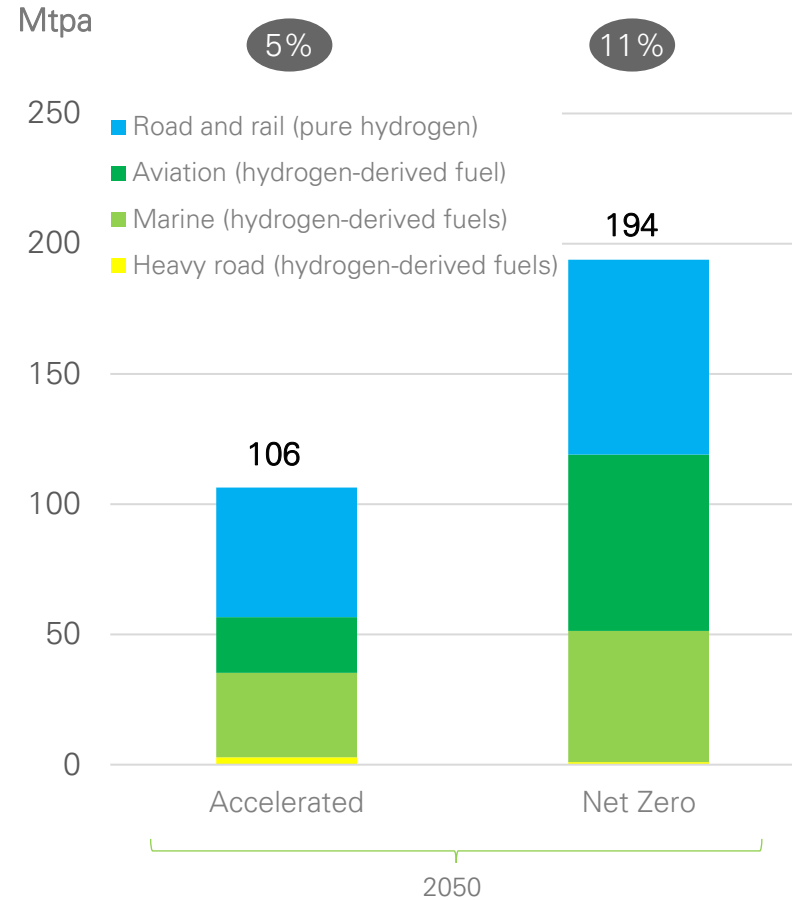
# Hydrogen will play a key role across applications in industry, transportation and energy



Hydrogen demand by sector



Hydrogen demand for hydrogen-based fuels



Source: bp Energy Outlook 2023

x% H<sub>2</sub> demand as % of total final consumption of energy across all sectors / transport

Demand could increase by ~7x by 2050 with low-carbon hydrogen expected to represent ~96% (Acc), driven by adoption in:

- **H<sub>2</sub> as feedstock:**
  - Transition from grey to clean hydrogen (refining, ammonia, methanol etc.)
  - DRI as a new application replacing coke
- **Heat generation:**
  - High-grade heat in industry, hard to electrify, replacing coal, oil, and natural gas
  - Decentralized residential heating, replacing natural gas
- **Transportation:** HD and long distance like trucks, marine, aviation, replacing diesel, gasoline, kerosene, HFO
- **Power:** Renewables firming, seasonal storage, arbitrage